

Report Information  
from Dialog DataStar



# Table of Contents

DataStar Documents.....	1
Anomalous first-phase formation in rapidly thermal annealed, thin-layered Si/Ni/Si films.....	1
Enhanced thermal stability of NiSi films on Si(111) substrates by a thin Pt interlayer.....	1
Search Strategy.....	3

## Anomalous first-phase formation in rapidly thermal annealed, thin-layered Si/Ni/Si films.

### Dialog eLinks

Full text options [USPTO Full Text Retrieval Options](#)

### Accession number & update

0002766722 20070101.

### Source

Applied Physics Letters, [Appl-Phys-Lett-USA], 4 Aug. 1986, vol. 49, no. 5, p. 257-9, 12 refs, CODEN: APPLAB, ISSN: 0003-6951, USA.

### Author(s)

Natan-M.

### Author affiliation

Natan, M., Martin Marietta Corp., Baltimore, MD, USA.

### Abstract

The initial stages of silicide formation in very thin-layered Si/Ni/Si films reacted by rapid (pulsed) annealings were investigated using the rapid thermal annealing/transmission electron microscopy technique. At least four phases, **NiSi**,  $\delta\text{Ni}/\text{sub } 2/\text{Si}$ ,  $\theta\text{Ni}/\text{sub } 2/\text{Si}$ , and  $\text{Ni}/\text{sub } 31/\text{Si}/\text{sub } 12$ , are shown to form first after 1 s annealings in the 175-300°C temperature regime; the actual phase and its nucleation kinetics depend on the Si:Ni **ratio** and on substrate deposition temperature. An amorphous (Ni+Si) mixture is shown to exist as a precursor to  $\theta\text{Ni}/\text{sub } 2/\text{Si}$  and **NiSi**. The multiplicity of 'first' phases and the dependence on the Si:Ni **ratio** contradict various 'first-phase' rules and steady-state annealing data obtained on thicker films and in metal-Si wafer reactions. A simple model that accounts for the stoichiometry and substrate-temperature dependences is suggested.

### Language

English.

### Publication year

1986.

### Copyright statement

Copyright 1986 IEE.

((c) 2008 The Institution of Engineering and Technology)

## Enhanced thermal stability of NiSi films on Si(111) substrates by a thin Pt interlayer.

### Dialog eLinks

Full text options [USPTO Full Text Retrieval Options](#)

### Accession number & update

0006835791 20070101.

### Source

Journal of Crystal Growth, [J-Cryst-Growth-Netherlands], Dec. 2000, vol. 220, no. 4, p. 488-93, 20 refs, CODEN: JCRGAE, ISSN: 0022-0248. Publisher: Elsevier, Netherlands.

### Author(s)

Liu-J-F, Chen-H-B, Feng-J-Y.

### Author affiliation

Liu, J.F., Chen, H.B., Feng, J.Y., Dept. of Mater. Sci. & Eng., Tsinghua Univ., Beijing, China.

### Abstract

A thin interlayer of Pt can greatly enhance the thermal stability of **NiSi** films formed by rapid thermal annealing (RTA) on Si(111) substrates, as was revealed by X-ray diffraction (XRD) data and sheet resistance measurement. High-resolution transmission electron microscopy (HRTEM) reveals a well-defined interface between the Ni(Pt) Si film and the Si(111) substrate for the Ni/Pt/Si sample annealed at 640°C. The orientation relationship in this sample determined by selected area electron

diffraction (SAED) was **NiSi(100)**parallel/Si (111) and **NiSi(01 $\overline{1}$ 0)**parallel/Si(011 $\overline{1}$ ). With the increase of temperature, the texture of **NiSi** films transform from **NiSi(100)** parallel/Si(111) to **NiSi(001)**parallel/Si(111). The reduction in the interfacial energy due to the formation of the (100) textured **NiSi** film is proposed as a possible reason for the improved thermal stability of **NiSi** and the transition in **NiSi** texture during high- temperature annealing. Detailed study on the XRD data combined with Auger electron spectra (AES) indicates PtSi and **NiSi** form a solid solution following Vegard's law, which adjusts the lattice constant **ratio**  $c/b$  to  $\sqrt{3}$  and may account for the texture of **NiSi(100)** parallel/Si(111).

**Language**

English.

**Publication year**

2000.

**Copyright statement**

Copyright 2001 IEE.

((c) 2008 The Institution of Engineering and Technology)

## Search Strategy

No.	Database	Search term	Info added since	Results
1	INZZ	(nickel ADJ monosilicide OR NiSi) AND ratio	unrestricted	60

Saved: 26-Apr-2008 02:18:53 MEST